Then there was the first finding of *Cystopteris bulbifera*. Taken on a pleasure drive in Hartland, Vermont, on the road between Windsor and South Woodstock, a growth of what appeared to be very graceful vines on the rocks and tree stems just where a little brook drops down off Pisgah into the wayside gutter, attracted my attention. Getting out to investigate, I picked a Cystopteris frond three feet long!

These are a few of the most vivid memories, pictures that will adorn my gallery and help to sweeten life as long as life lasts.

STILL RIVER, MASS.

Experiments in Naturalizing Ferns.

EDWARD H. CLARKSON.

During the past six years, the writer has transplanted several species of ferns to the woods around Newburyport and Rockport, Mass. In most cases these ferns have lived and flourished. The only disappointment was in the case of a little group of oak ferns, *Phegopteris Dryopteris*, set out on the bank of Jackman's ravine at the Newburyport water works. This grew well for several weeks after being put there and then was most unexpectedly destroyed, being covered by several hundred pounds of sand and gravel piled on it by a very careless woodchuck that dug a hole close by!

On June 1st, 1917, I transplanted from my fern garden to a certain rocky woodland valley on Scotland road, between Newburyport and Byfield, twelve male ferns, *Dryopteris Filix-mas*. Six of these were placed against a ledge in company with a number of thrifty marginal ferns, in a well-drained spot where there was plenty of overhead light and some direct sunshine. These have grown into large plants, which this year had many large fertile fronds. The six other male ferns, set out in the same

valley, but not near rocks and not in company with marginal ferns, have all lived, but have not done as well as the first lot.

A cluster of the maidenhair spleenwort, *Asplenium Trichomanes*, set out here in 1917, was placed in the crevice of a polypody-encrusted rock near the most flourishing colony of male ferns. This has not only lived, but seems to be increasing in size. A group of Goldie's fern, *D. Goldiana*, placed not far from here in 1917, has done well, putting out a fine lot of big fertile fronds this year.

Perhaps my most successful venture has been with the broad beech fern, *Phegopteris hexagonoptera*. Five colonies of this fern, which spreads rapidly by its branching rootstocks, were set out in various spots in partial shade, in 1916, 1917 and 1918. Before setting them out, the ground was thoroughly prepared by being dug up and all roots of plants and grass removed. At one place I added a lot of peat to the leaf mold and it is at this spot that the hexagonoptera fronds are largest and finest. All five colonies, however, have done well, producing numerous fertile fronds, and unless something unexpected happens to destroy them, should persist and spread.

Three lots of the narrow-leaf chain fern, *Woodwardia areolata*, were also transplanted to swamps around Newburyport and Rockport in 1916 and 1917. In every case these were placed not far from spots where the Massachusetts fern, *D. simulata*, was growing naturally, care being taken to select a well-drained piece of ground. All three of these groups have flourished and spread out to some extent, the Rockport colony in particular sending up this summer some of the finest fertile fronds I ever saw. This small chain fern is very rare in this section. Except for the little plantations just mentioned, I know of only two places where it may be found in Essex County. One is within half an hour's walk of

my home, at Ring's Island just across the Merrimack River, where there is a good-sized colony growing in a peaty swamp in company with many fine big Massachusetts ferns. The other is at Magnolia Swamp, Gloucester, Mass. In the northern end of this swamp there is a nice lot of this areolata. It also grows in numerous detached groups in a swampy spot near the "hermit's" cabin. I visited the hermit, M. A. Walton, who occupied this cabin for many years before he died, especially to see the two chain ferns—for the big chain fern, *W. virginica*, is also very abundant here, growing sometimes over five feet tall. Walton told me that when he first came here there was none of the little chain fern near his cabin. The following letter from him, explaining how this fern was transplanted to the swamp nearby, is very interesting. The fern book that he speaks of was a copy of Waters' "Ferns" that I gave him.

Gloucester, Aug. 22, 1916

My dear Mr. Clarkson:—

Fern book was received yesterday. It is a delightful book. Please accept my sincere thanks for same.

Now as to ferns. When I came here 32 years ago I found the chain fern (Woodwardia angustifolia) in Magnolia Swamp, but in the north end only. The park owns that location, with the exception of lots that I control (subject to sale). Students came to my cabin hunting for ferns to press. Many were from colleges. I was told that it would be a good plan to transplant the fern to the swamp near the cabin. I took the hint and transplanted twenty lots to the swamp where you got the ferns when here. The swamp contained no chain ferns before. Now there is a fair number scattered over the swamp. The swamp is owned by the park and the park will not allow anything to be removed. The park may buy the lots under my care; in that case it would have all the chain ferns. I have tramped over about every foot of swamp in Gloucester and Magnolia and not a frond came to hand. The late Charles Pew told me that twenty years' walks of the Gloucester Nature Club had failed to find the fern except in Magnolia Swamp. It would be time wasted, I think, to hunt swamps.

Sincerely yours,

M. A. Walton.

In the woods near the Artichoke River, in West Newbury, is a fine colony of the maidenhair fern, *Adiantum pedatum*, that was undoubtedly put there many years ago by a lady who lived not far away.

If other members of the American Fern Society would also try the experiment of setting out some of the less common ferns in the woods near their homes, it might prove not only very interesting, but possibly might bring very practical results. The male fern, for instance, might be induced to live and propagate so that eventually it would be more widely distributed.

NEWBURYPORT, MASS.

CYSTOPERIS BULBIFERA BERNH. Our President, Mr. Wm. R. Maxon, has outlined in the May–June Fern Journal some valuable suggestions to fern lovers along the line that each member should give special and accurate study to some particular fern in his locality, with reference to its life history in every detail from season to season, and report any interesting information thus acquired for the benefit of our fellow fern fanciers.

There is in this vicinity a fairly deep ravine containing a running stream, the upper sloping banks of which are shaded mostly with maple, birch and spruce foliage. The illumination from above is sufficient for a rich, healthy growth; the sub-soil is ordinary, grayish clay, overlaid with quite a depth of leafy black mould in which are creamy, granulated, and graduated particles or lumps of carbonate of lime, from the size roughly speaking of rice to that of lump sugar and larger. The middle of the bank is fairly level and dryish but the balance of the incline is quite steep and moist, while through the top of the loam there is a constant seepage of moisture from above, making the soil in most places quite soft and boggy and too wet to tread upon with comfort.